The thesis deals with Archimedean copulas which are very popular nowadays due to easy construction and their appealing properties. At first it introduces the general definition of a copula and also shows its fundamental properties. After that the definition and the basic properties of an Archimedean copula are discussed. The paper also describes some of the commonly used families of Archimedean copulas. Then several methods of parameter estimation for Archimedean copulas are shown. Finally, we make a study of two real datasets where the distribution of the data is estimated based on the procedures described in the thesis.